

What is claimed is:

1. A tire winch for attachment to a vehicle tire, said tire winch comprising:
 - a spool having a substantially cylindrical hub;
 - a means for attaching said spool to the vehicle tire such that a rotation of the vehicle tire causes a first point on said spool to rotate about an arc that is substantially equal to an arc rotated by a second point on said vehicle tire; and
 - a torque-limiting means for causing said first point on said spool to rotate about an arc that is substantially less than an arc rotated by a second point on said vehicle tire when a torque exerted upon said spool exceeds a predetermined limit.
- 10 2. The tire winch as claimed in claim 1 wherein said torque-limiting means comprises a ratchet mechanism.
3. The tire winch as claimed in claim 1 wherein said hub is dimensioned such that an outer diameter of said hub is at least 40% of an outer diameter of the vehicle tire.
4. A tire winch for attachment to a vehicle tire, said tire winch comprising:
 - a spool comprising a substantially cylindrical hub having an outer diameter that is at least 40% of an outer diameter of the vehicle tire; and
 - a means for attaching said spool to the tire such that a rotation of the vehicle tire causes a first point on said spool to rotate about an arc that is substantially equal to an arc rotated by a second point on said vehicle tire.
- 15 20 5. The tire winch as claimed in claim 4 wherein said means for attaching said spool to the vehicle tire comprises a ratchet mechanism adapted to cause said first point on said spool to rotate about an arc that is substantially less than an arc rotated by a second point on said vehicle tire when a torque exerted upon said spool exceeds a predetermined limit.

6. A tire winch kit for attachment to a vehicle tire, said tire winch kit comprising:
 - an unwinding spool comprising a substantially cylindrical hub having an outer diameter that is at least 40% of an outer diameter of the vehicle tire;
 - a winding spool comprising a substantially cylindrical hub having an outer diameter that is less than 40% of an outer diameter of the vehicle tire; and
 - a means for attaching one of said unwinding spool and said winding spool to the vehicle tire such that a rotation of the vehicle tire causes a first point on said spool to rotate about an arc that is substantially equal to an arc rotated by a second point on said vehicle tire.
7. The tire winch kit as claimed in claim 6 further comprising a flexible pulling member dimensioned for attachment to said outer diameter of said hub.
8. The tire winch system as claimed in claim 6 wherein said flexible pulling member is a strap.
9. The tire winch kit as claimed in claim 6 wherein said means for attaching one of said unwinding spool and said winding spool to the vehicle tire comprises a plurality of blocks extending from an outer surface of a rim of said tire, and wherein each of said winding spool and said unwinding spool comprise a plurality of toothed sections dimensioned to mate with said plurality of blocks.
10. The tire winch kit as claimed in claim 9 further comprising a plurality of clips dimensioned to secure one of said winding spool and said unwinding spool to said tire.
- 20 11. The tire winch kit as claimed in claim 6 wherein said means for attaching one of said unwinding spool and said winding spool to the vehicle tire comprises a hub mounted bracket comprising a plurality of holes disposed and dimensioned to mate with a plurality of lugs of said vehicle tire and a plurality of teeth, and wherein each of said winding spool and

said unwinding spool comprise a plurality of toothed sections dimensioned to mate with said plurality of teeth of said hub mounted bracket.

12. The tire winch kit as claimed in claim 11 further comprising a plurality of clips dimensioned to secure one of said winding spool and said unwinding spool to said tire.

5 13. The tire winch kit as claimed in claim 6 further comprising a torque-limiting means for causing said first point on said spool to rotate about an arc that is substantially less than an arc rotated by a second point on said vehicle tire when a torque exerted upon said spool exceeds a predetermined limit.

14. The tire winch kit as claimed in claim 13 wherein said torque-limiting means
10 comprises a ratchet mechanism.

15. A method for pulling an object, said method comprising the steps of:
attaching a tire winch comprising a spool and a hub to a drive wheel of a vehicle,
wherein said hub has a diameter that is less than a diameter of a tire of said drive wheel of
said vehicle;

15 wrapping a first end of said flexible pulling member around said hub such that only a
small portion of a length of said flexible pulling member extends therefrom;

attaching a second end of a flexible pulling member to the object to be pulled;
engaging said drive wheel of said vehicle such that said vehicle moves away from said
object and such that said flexible pulling member unwinds from said hub; and

20 continuing said engagement of said drive wheel of said vehicle until said pulling
member disengages from said hub;

whereby said object is pulled a distance that is less than a distance traveled by said
vehicle.